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PETER PFEUFFER

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EXAMINER

TOLIN, MICHAEL A

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 08/900,254	Applicant(s) PFEUFFER, PETER	
	Examiner MICHAEL A. TOLIN	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 9-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1 and 9-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 1997 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1 and 9-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As set forth below in the rejection of claims 1 and 9-14 under 35 USC 112 second paragraph, there is no disclosure of a calendering operation which forms a three-dimensional pleated filter material. In particular, the calendering forms spacers and subsequent folding forms the pleated filter material (Applicant's specification, page 2, lines 15-29). Accordingly, it does not appear Applicant possessed the limitation of calendering to form the three-dimensional pleated filter material, which is now recited in independent claims 1 and 9, at the time of the invention.

Regarding claim 11, there is no disclosure of a particular preheating temperature range. The specification indicates that preheating may be used in conjunction with hot or cold calendar rolls (page 3, line 37; page 4, lines 1-3), but does not indicate a particular preheating temperature range. Accordingly, it does not appear Applicant

possessed the limitation of preheating up to the melting point of the undrawn fibers at the time of the invention.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1 and 9-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1, as currently amended, and new claim 9 are confusing for the following reasons. The specification explains that a fibrous web is bonded between profiled calender rolls to form spacers for folds which are provided subsequently (page 2, lines 15-29). One of ordinary skill in the art reading this passage would appreciate that the spacers are designed to maintain separation between the pleats of the subsequently folded filter material. In other words, calendering produces the spacers while folding of the calendered filter material forms the pleats. The use of such spacers in pleated filter material is generally well known in the art. For example, see Harris (US 4102792; column 1, lines 22-29). However, amended claim 1 and new claim 9 now indicate that calendering forms the three-dimensional pleated filter material. This is inconsistent with the specification which indicates that pleats are formed by subsequent folding after the calendering operation. It is entirely unclear how a three-dimensional pleated filter material, emphasis on "pleated", is formed by the calendering operation without a recited subsequent step of folding.

It is noted that the prosecution history includes a broad interpretation of the term “spacers”. The examiner has taken the position that broadly recited “spacers” do not distinguish over pleats. The Board has maintained this interpretation (Decision mailed 25 January 2006, page 2). This broad interpretation of “spacers” is maintained here, and additionally an alternative interpretation of “spacers” is applied as set forth in the rejection of claims 9 and 14 under 35 USC 103 below.

Regarding claim 14, a ratio is expressed as A to B, which indicates A divided by B. A ratio of A and B does not have a clear meaning. The examiner cannot suggest a correction for this problem because the specification does not clarify whether the ratio is height to width or width to height. The examiner suggests providing objective evidence as to how one of ordinary skill in the art would have interpreted this limitation, described in the specification on page 4, lines 20-31.

Further regarding claim 14, there is no antecedent basis for “verticies”.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (US 4496583) in view of Naruo (US 4876007), Norton (US 2862582), and

Wydevan (US 4589983), and further in view of Jacobsen (US 5484501) or Capell (US 3679515), and further in view of Zanferrari (US 5298097) or Brock (US 3695985).

The claims are rejected here for the reasons set forth in numbered paragraph 3 of the previous office action, mailed 18 September 2007. The amended claim terminology is discussed in the Response to Arguments section below.

7. Claims 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Naruo and Norton.

Yamamoto, Naruo and Norton are applied as set forth in numbered paragraph 3 of the previous office action, mailed 18 September 2007.

Regarding claim 12, the elevations which produce the pleats suggested by the calendering method of Norton are clearly well in excess of the thickness of the filter material which is pleated, as is conventional in the art of pleating filter material. Alternatively, the elevations of the pleats also correspond to the thickness of the final pleated material. Accordingly, the limitation of claim 12 is satisfied.

8. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Naruo and Norton, and further in view of Zanferrari or Brock.

Yamamoto, Naruo, Norton, Zanferrari, and Brock are applied as set forth in numbered paragraph 3 of the previous office action, mailed 18 September 2007.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Naruo and Norton, and further in view of Wydevan.

Yamamoto, Naruo, Norton, and Wydevan are applied as set forth in numbered paragraph 3 of the previous office action, mailed 18 September 2007.

10. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Naruo and Norton, and further in view of Thornton (US 4772443) and Petranyi (DE 4024053), and further in view of Zanferrari and Brock.

Yamamoto, Naruo, Norton, Thornton, and Petranyi are applied as set forth in the Examiner's Answer mailed 04 October 2004 and the Board Decision mailed 25 January 2006.

As to preheating up to the melting point of the undrawn fibers, this is an expected temperature range. Heating to a temperature above the melting point of the undrawn fibers would cause them to melt and flow, thereby blocking pores and reducing filtration capacity. Additionally, determination of an appropriate temperature for activation of the undrawn fibers involves no more than expected and routine experimentation. For example, Thornton refers to heating to a "stick point" (col. 1, line 49). Petranyi refers to an "activation temperature" (translation, page 4). Zanferrari and Brock are additionally applied as set forth on pages 7 and 8 of the previous office action, mailed 18 September 2007 for providing motivation to activate at temperatures below the melting point.

11. Claims 9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Harris (US 4102792), Norton, and Naruo.

Yamamoto is applied as set forth in numbered paragraph 3 of the previous office action, mailed 18 September 2007, for providing a filter sheet material made from undrawn and drawn synthetic fibers in which the undrawn fibers can be fuse bonded at low temperatures without using a bonding material, for example, with a heated calender roll.

As noted above in the rejection under 35 USC 112 second paragraph, the prosecution history includes a broad interpretation of the term “spacers”. The examiner has taken the position that broadly recited “spacers” do not distinguish over pleats. However, pleats do not typically have a height to width ratio (assuming this was the intended ratio) within the range of claim 14. Pleats typically have a much higher height to width ratio in order to maximize the effective filtration area of the filter material. Accordingly, a different interpretation of “spacers” is applied here.

Yamamoto does not recite the claimed calendering step to form spacers or forming a pleated material. However, it is generally known to provide filter material with parallel corrugations which act as spacers when the filter paper having such spacers is subsequently folded into a pleated material. See Harris (column 1, lines 17-61; column 2, lines 40-60; column 3, lines 37-55). Harris also indicates that mating corrugating rolls can be used to provide the desired parallel longitudinal lines of corrugations (column 1, lines 34-40; column 2, lines 45-60). As to forming bonds between the profiled calender rolls, as noted above Yamamoto suggests bonding between rolls. Additionally, Norton

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teaches bonding and shaping between profiled rolls in order to achieve a suitably strengthened filtering medium (column 2, lines 66-72). To practice the modified method of Yamamoto as suggested by Norton, one of ordinary skill in the art would have similarly performed bonding and shaping between the profiled rolls. Only the expected result of shaping the filter material and activating the undrawn fibers to stabilize the shape has been achieved. As to forming pleats, pleats are provided for increasing the filter capacity of a filter material. Naruo is cited as evidence for this assertion (column 1, lines 33-39). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide Yamamoto with the claimed steps of calendering and bonding between profiled calender rolls and forming a stable three-dimensional pleated shape because one of ordinary skill in the art would have been motivated to provide pleats for increased filter capacity and spacers for keeping the pleats apart in accordance with the teachings of Harris and well known advantages of pleating in the filtration art as evidenced by Naruo and because one of ordinary skill in the art would have been motivated to provide a suitably strengthened filtering medium in accordance with the teachings of Norton.

As to forming bonds in the calendering operation, Norton clearly suggests providing bonding between the profiled calender rolls before the adhesive sets to form a suitably strengthened filtering medium (column 2, lines 66-72). The difference between Norton and Yamamoto is that Yamamoto provides undrawn fibers for achieving bonding instead of an adhesive. In view of Norton, one of ordinary skill in the art would have

been expected to provide bonding between the profiled rolls to achieve a suitably strengthened filtering medium.

Regarding claim 14, Harris explains that if the spacer corrugations are too deep, local compression occurs at crests and troughs, resulting in an undesirable reduction in permeability and possible rupture of the filter material (column 1, lines 34-40). Harris also suggests relatively small corrugation heights (column 2, lines 31-35). Additionally, Figures 1 and 2 of Harris show height to width ratios which are close to or within the claimed range. Further, the corrugations must be of a suitable height in order to provide sufficient spacing between the pleats. Accordingly, it appears that determination of appropriate height to width ratios in order to avoid excessively deep corrugations which have the above noted problems recognized by Harris and also to provide suitable spacing between pleats involves no more than expected and routine experimentation for one having ordinary skill in the art. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide height to width ratios within the claimed range because one of ordinary skill in the art would have been motivated to provide such ratios in order to avoid excessively deep corrugations while providing suitable spacing as a matter of routine experimentation in accordance with the teachings of Harris.

Response to Arguments

12. Applicant's arguments filed 22 January 2008 have been fully considered but they are not persuasive.

Applicant argues that the prior art of record does not teach or suggest forming a stable three-dimensional pleated shape. The examiner disagrees. Any non-planar shape is three-dimensional. The pleated shape formed by profiled calender rolls is clearly three-dimensional. Additionally, the pleated shape is necessarily stable or it would not serve the intended purpose of providing increased filtration capacity by maximizing area of the filter material.

Applicant argues that there is no teaching or suggestion to form bonds in the calendering operation since the filter material of Yamamoto would have already been fuse bonded. However, Norton clearly suggests providing bonding and shaping between the profiled calender rolls before the adhesive sets to form a suitably strengthened filtering medium (column 2, lines 66-72). In view of Norton, one of ordinary skill in the art would have been expected to provide bonding and shaping between the profiled rolls rather than provide bonding before the profiled rolls to achieve a suitably strengthened filtering medium. Further, since Norton suggests that bonding sets the filter in a formed shape, one of ordinary skill in the art would not have been led to bond and set the web in a flat shape if a corrugated shape is desired. Instead, as suggested by Norton, one of ordinary skill in the art would have performed bonding and shaping between the profiled rolls.

Applicant argues that there is no indication that the material of Yamamoto can maintain its shape after being passed through the profiled rollers. However, Yamamoto indicates that the material can be embossed or creped (column 5, lines 1-8). Yamamoto also indicates that the material has excellent mechanical strength,

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dimensional stability, thermal resistance, filtering properties, and that it is paper-like (column 1, lines 9-17). One of ordinary skill in the art would have reasonably expected a material having excellent mechanical strength and dimensional stability which is intended for filtering applications and has paper-like characteristics to be suitable for use in a method of shaping filter material. Applicant has not provided any objective evidence to the contrary.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL A. TOLIN whose telephone number is (571)272-8633. The examiner can normally be reached on M-F 9am to 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael A Tolin/
Examiner, Art Unit 1791

/Richard Crispino/
Supervisory Patent Examiner, Art Unit 1791